

September, 1864. General colour reddish brown. Under neck and fore thighs covered with rather long dusky brown hair. Hair of neck, chiefly on its back part, and down part of the back list, long and shaggy. List black between the shoulders, fading towards the tail. Inner portion of hind thighs, inside hair of ears, a large spot on the outer portion of back of ear near its root, rim round the eye, chin, and throat white. Body ornamented with large spots of white. Tail, including apical hair, nearly one foot long. The hair that overhangs the roots of the tail on either side black; basal half of tail white; apical half black, with white tips; under the tail and between the hams white. Knees and front of tibiæ brown. Head, from crown to tip of nose, about 20 inches long; ear about 9 inches. Forehead and before the eyes reddish; rest of face brownish fawn-colour. Horns with frontal tine about 5 inches long, bent a little downwards at the tip; about 8 inches in the stem between lowest tine and the next above, which are broken and represented only by a knob; top stem between that and the top knob about 4 inches.

“This is the finest species of the Spotted Deer I have seen. Besides being much larger than the *C. taëvanus* of Formosa, it is at once to be distinguished by the much greater proportion of white in the tail and hind parts, and by the faintness of the dorsal list; but doubtless many other more considerable distinctive characters will be found to exist on a careful comparison of the two species. With *C. sika* it has much less in common; and this bears out the opinion I advanced as to the greater probability of the fauna of Formosa having been derived from the Chinese main rather than from the Japanese islands. But it is curious that at the present day, south of the Yangtze River, the only Spotted Deer known to exist is what I take to be the true *Cervus axis*, some of which from Hankow I saw captive in Hongkong, and reported on in a former letter.”

The following papers were read:—

1. ON THE FISHES OF COCHIN, ON THE MALABAR COAST OF INDIA. BY SURGEON F. DAY, F.Z.S., F.L.S., ETC., MADRAS ARMY.

Part I. ACANTHOPTERYGII.

During a few years' residence at Cochin, on the Malabar or western coast of India, whilst inquiring into the fauna, I made a collection of fresh- and salt-water fish, a short account of which I beg to offer for the consideration of this Society. My catalogue (for it is scarcely more) will only contain such species as I have been able to bring with safety to this country; for many specimens, I regret to say, have been either mislaid or destroyed.

As my purpose is simply to enumerate fishes of Cochin, the periods of the year at which they arrive, and the uses or abuses to which they are put, I shall take Dr. Günther's most valuable catalogue as my text-book, adhere to his arrangement, and as closely as

possible make use of the names he has appropriated to each species. I shall describe not only every new fish which I have obtained, but also those whose existence has been declared *very doubtful*, but of which I have been so fortunate as to obtain specimens. In the descriptions I shall adhere as nearly as possible to one formulary, and give the exact and comparative proportions of the various parts of the body, head, and fins. The vernacular names will be recorded, when such were ascertained beyond a doubt; but they vary greatly in different localities. The native Christians do not give the same appellations to species as obtain amongst the Mahomedans, which again differ from those employed by the Hindus and even by different castes of the Hindu races. In short, various designations are found for the same fish, according to the locality it inhabits and the race of natives conversing.

The classes who fish along the sea-coast and in the backwaters are the native Christians, the Mahomedans, and the Arrian caste of Hindus; whilst the inland pieces of water are left to the Perdana Kanakas, the most degraded of a degraded race of slaves, who are only able to follow this pursuit in the early mornings or late in the evenings, when not required for agricultural labour. Nominally manumitted, but in reality compelled to work for a certain amount of rice (at least, when in health; for since their freedom they obtain nothing when ill), it is fortunate for them that fish forms no portion of their masters' diet.

The manner of fishing varies according to the season of the year, and whether employed in the sea, backwater, rivers, or tanks. Wall, cast, stake, and Chinese nets are all used. The last, situated on the banks of the river, are about 16 feet square, suspended by bamboos attached to each corner, and let down like buckets into the water, and, after remaining there a few minutes, pulled up again. As this mode of fishing is continued all through the year, it affords an excellent criterion of the families and species present, even when sea-fishing is suspended.

Besides the foregoing, fishing with a bait is employed at all times, both from the shore and small canoes. Trolling at the river's mouth, chiefly for the *Polynemus tetradactylus*, mostly takes place in the cold months. Likewise shooting with a Chittagong bow, or bows and arrows, capturing by means of bamboo labyrinths, and poisoning the water by nux vomica, cocculus indicus, Croton-oil seeds, or other deleterious substances, are all common; also damming up and lading out streams, purse-nets in small water-courses, especially in rice-fields, catching by the hand, or by means of wicker baskets somewhat resembling the eel-traps in this country.

The coast is low, without rocks, but with several mud-banks, to which many fish appear to come for the purpose of depositing their spawn. A low narrow slip of sandy soil divides the backwater from the sea, with which it runs parallel for several hundred miles. Some large rivers, which take their rise in the Western Ghauts, pass downwards through this backwater into the sea. The Cochin River is 800 yards in width.

During the south-west monsoon, which lasts from the commencement of June until the middle of August, an immense amount of fresh water finds its exit by these rivers; and it is said that the sea, for sometimes as much as two miles from the shore, is comparatively saltless. Of course, at this period, whole tribes of fish migrate, whilst others take their place.

The exact amount of salt fish exported from British and Native Cochin I have been unable to ascertain; but in the neighbouring state of Travancore the average yearly exports by land and sea are a little above 44,000 bundles, of about the declared value of £3150. Ceylon is the chief market for salt fish; and, off British Cochin, Ceylonese boats may frequently be perceived scudding along, their occupants capturing the fish, which, after having salted, they carry back to their own country. A heavy salt-tax renders the outlay necessary for the purchase of any quantity of this condiment almost an impossibility to the poor fishermen of the coast; it is consequently only the moneyed man who can engage in the curing of fish. But large taxes on its sea export, duties on its transit along the backwater, vexatious scrutinies and detentions at the various Custom Houses do not conduce to the success of this trade.

The Mackerel, Saw-fish, Rays, Sharks, and the *Chirocentrus dorab* are those most commonly salted; whilst the Sardines, which sometimes appear in enormous numbers, are turned into fish-oil, although the manufacturer of this article is not very particular as to the exact species which finds its way into his boiling-pot. These fisheries, which might be made extensively available for increasing the amount of human food, have been applied to quite another use, although one which is very profitable to Europe. As the market for fish has increased, the supply has kept pace with the demand; and the greater part of those not consumed when fresh are manufactured into oil, as the following figures of the exports and imports of British Cochin will demonstrate:—

Fish-oil.	Imported. cwt.	Exported. cwt.
In five years ending 1845, 1846....	36	66
„ „ 1850, 1851....	912	3,586
„ „ 1855, 1856....	31,196	91,077
„ „ 1860, 1861....	24,142	98,151

The livers of the Sharks and Rays also afford excellent oil, which is used in the Government hospitals as a substitute for cod-liver oil. This was formerly manufactured in British Cochin; but for the last few years has been so at Calicut. Two species of fish-roes are extensively sold, those most esteemed when fresh being the small ones of the *Hemiramphus*, whilst the largest are taken from the Mulletts; these last are often dried and even exported. I was unable to ascertain that isinglass had ever been made in Cochin; but remarks on the uses to which the various fish are put will be placed with the respective species.

In Europe, from very early ages, fisheries have been protected by

legislative enactment; but in India they have not yet met with the attention they deserve. Along the Malabar coast, since fish have obtained such a ready market, the number of fishermen has greatly increased, and instead of there being, as formerly, competition for the post of panlanquin-bearers, they are procured with the greatest difficulty, which no doubt is partly owing to the augmented profits of the fishermen.

The Western Ghauts are gradually becoming studded with coffee-plantations, and the coolies employed on them are glad to purchase all the salt fish they can obtain. Probably, at no distant date, the coffee-planter will unite with the philanthropist in desiring that the western-coast fisheries may be turned to greater advantage for the supply of human food. The first step towards this desirable result must be some diminution or alteration in the salt-tax, or rather in the price of salt, which is now a monopoly of the British and native governments. But this is a subject for the politician and financier, not for the naturalist, to solve; but such a result would undoubtedly prove to Malabar humane, beneficial, and politic.

LATES CALCARIFER, Bloch.

Nuddee-meen (Malayalim).

B. vii. D. $7\frac{1}{11}$. P. 17. V. $\frac{1}{5}$. A. $\frac{3}{8-9}$. C. 17. L. 1. 52. L. tr. $\frac{7}{11}$.

Length of specimens*, from $6\frac{5}{10}$ to $22\frac{4}{10}$ inches.

This large grey Perch is well entitled to his distinctive native name of "The River-fish," for in Cochin it must be ranked as amongst the best of the finny tribes. It is also called the "Nair-fish," because the Nairs, although Sudras, are considered the nobility of Malabar.

Plentiful; but held in too great a request for the table to be salted or dried. The best quality of "Tamarind-fish" is prepared from it by the following process:—The fish is boiled, then the bones are removed; it is next sliced, and, having been highly spiced, is left to soak for some days, and subsequently packed in jars. This is held in great estimation in the East.

It is caught up to 5 feet in length; but the largest fish are not the best for eating.

SERRANUS BONTOO, Cuv. & Val.

B. vii. D. $\frac{11}{16}$. P. 19. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. r. † about 100.

Length of specimen 13 inches.

Colours. Brownish grey on the back, fading to dirty white on the abdomen. When first caught, they have generally five or six dark

* These figures denote the largest and smallest specimens in my collection, but not the largest obtained in Cochin.

† L. r. is used in this paper to denote the number of rows of scales, *passing downwards* to the lateral line; and L. l. the number of scales *along* the lateral line.

vertical bands; but these fade after death. The whole of the body and fins are covered with round black spots, in some places amounting to blotches. Iris olive-green, with a golden margin.

Not very common; do not appear to attain any very large size; are good eating.

SERRANUS SEXFASCIATUS, Cuv. & Val.

B. vii. D. $\frac{11-12}{16}$. P. 18. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. r. about 100.

Length of specimens from 5 to $7\frac{6}{10}$ inches.

One specimen has twelve dorsal spines and sixteen rays; consequently it is not an undeviating rule in this genus that, should one spinous ray be in excess, there will be a corresponding soft ray deficient.

Common. General length about 5 inches; rarely, if ever, exceeding 8.

SERRANUS DIACANTHUS, Cuv. & Val.

Killi meen (Mal.).

B. vii. D. $\frac{11}{15}$. P. 19. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 16. L. r. 90.

Length of specimens from $5\frac{7}{10}$ to 13 inches.

Colours. Brownish, fading into white on the abdomen. The whole of the fish, even over its branchiostegous rays, covered with bright orange spots, intermingled with brown ones on the head and tail. Fresh specimens have five vertical bands, which often fade after death. In the young fish these bands are more distinct and persistent; whilst the general ground-colour is leaden, and the orange spots less marked.

Plentiful; excellent eating; and fish from 10 to 15 lbs. weight are considered of fair size, but they grow much larger.

SERRANUS LANCEOLATUS, Bloch.

Serranus horridus, Cuv. & Val.

Kurrupu (Mal.).

B. vii. D. $\frac{11}{15}$. P. 19. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. r. 90 to 105.

Length of specimens $7\frac{5}{10}$, $13\frac{1}{10}$, and $22\frac{7}{10}$ inches.

The *Serranus lanceolatus* and the *S. horridus* have been so accurately described by Cantor and others that a recapitulation appears to be unnecessary. In the smallest of these three specimens the comparative length of the spines exceeds the proportion to that of the soft rays which exists in the larger specimens. But the same alteration of the comparative length with age also obtains in the young specimens of the *S. diacanthus*.

Colours. These vary exceedingly with the age of the fish, so much so that the beautiful young has been named *S. lanceolatus*, and the old *S. horridus*; whilst, curiously enough, not only do the Malays (according to Cantor) recognize this fish, the "Ikan krapu," as being the same in both its liveries, but so do also the natives of Malabar.

There is one very distinctive portion of its coloration that appears hardly to vary, whether examined in the smallest specimens or those at least up to 20 lbs. weight: it is that of the pectoral, ventral, anal, and caudal fins, which are of a bright gamboge, with black spots or blotches, sometimes coalescing and forming arched bands. Cantor mentions that in the adult *S. horridus* the colours of the fins become greenish olive; but in a specimen 4 feet 3 inches long, which he describes, they were the same as given above.

The very young fish, of which there are several in the Government Museum at Madras, are of a fine citron or sulphur ground-colour, with irregular black bands or markings, which become more distinct as the size of the fish increases.

In a beautiful specimen, $7\frac{1}{2}$ inches in length, captured in Cochin in 1863, the ground-colour of the body and fins is of a bright gamboge, with five vertical blackish-blue bands,—the first passing from the orbit directly downwards over the præoperculum; the second from the crown of the head downwards over the operculum, and slightly impinging on the præoperculum, becomes lost in the first band anteriorly and the third posteriorly; the third, commencing in the space between the third and tenth dorsal spines, passes downwards and, narrowing, joins the second band in front, whilst below it is continued on to the abdomen; the fourth band extends from the fifth to the last soft ray of the dorsal, and passes downwards to the whole base of the anal; the fifth band covers most of the space between the caudal and the termination of the dorsal and anal fins. The fins are of the same bright yellow ground-colour as the body, with black spots or blotches forming confluent lines near their base; whilst on the pectorals they are disposed in three or four arched undulating bands. Large black blotches exist on the jaws. Iris golden.

In a fine specimen, over 13 inches in length, captured at Cochin in November 1863, the same distribution of coloration is perceptible; but its vividness has begun to fade, and marbling can be distinctly perceived over the whole of the yellow ground, whilst the dark tints of the bands have much lessened. It must also be remarked that, in this specimen, the comparative length of the dorsal spines to the rays has become the same as in the adult hitherto known as the *S. horridus*.

In a specimen captured in Cochin in 1862, nearly 23 inches in length, the adult livery of the *S. horridus* is perceptible. Back brownish, gradually fading into grey over the abdomen, the whole being marbled with darkish grey lines. The spinous portion of the dorsal brownish yellow, with a dark base. The soft portion of pectoral, ventral, anal, and caudal the same as in the younger specimens. Iris brown, with a golden rim.

This fish, which is excellent eating, is never rare at Cochin, but is mostly captured in the monsoon months: one, in 1861, was of about 20 lbs. weight. Cantor observes that it grows in the Straits to a gigantic size, and instances a specimen captured at Pinang, the weight of which exceeded 130 lbs.

GENYOROGE NOTATA, Cuv. & Val.

B. vii. D. $\frac{10}{14}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 19. L. l. 52. L. tr. $\frac{8}{14}$.

Length of specimens from $3\frac{6}{10}$ to 6 inches.

Not uncommon; do not appear to grow to a large size.

GENYOROGE CÆRULEOPUNCTATA, Cuv. & Val.

B. vii. D. $\frac{10}{15}$. P. 17. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. l. 45-50. L. tr. $\frac{9}{15}$.

Length of specimens from $4\frac{5}{10}$ to 6 inches.

Not common; mostly captured in the monsoon months. Do not appear to grow very large at Cochin; but in the Madras Museum are some of a great size.

MESOPRION JOHNNI, Bloch.

Chemboalay (Mal.).

B. vii. D. $\frac{10}{14}$. P. 18. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 16. L. l. 48. L. tr. $\frac{7}{10}$.

Length of specimens from $2\frac{5}{10}$ to $10\frac{5}{10}$ inches.

The intensity of the coloration of this fish very much decreases with age. A specimen, $2\frac{1}{2}$ inches in length, is of a beautiful golden colour, with an intense black finger-mark, extending from the lateral line to the fourth scale above and the second below it. In very old specimens the golden metallic lustre of the scales is almost gone.

Very common; grow to a large size, and are good eating.

MESOPRION AUROLINEATUS, Cuv. & Val.

B. vii. D. $\frac{10}{13}$. P. 16. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. l. 46. L. tr. $\frac{7}{13}$.

inches.

Length of specimen.....	$4\frac{5}{10}$.	
——— of head	$1\frac{2}{10}$,	or four-fifteenths of total length.
——— of pectoral	1,	or two-ninths of total length.
——— of caudal.....	$\frac{8}{10}$,	or one-sixth of total length.
——— of base of dorsal..	$1\frac{8}{10}$,	or one-third of total length.
——— of anal.....	$\frac{6}{10}$,	or one-eighth of total length.
Height of head	$\frac{9}{10}$,	or one-sixth of total length.
——— of body	$1\frac{3}{10}$,	or one-third of total length.
——— of hard dorsal....	$\frac{11}{20}$,	or one-fourth of total length.
——— of soft dorsal ...	$\frac{7}{20}$,	or one-sixth of total length.
——— of base of caudal..	$\frac{4}{10}$,	or one-eleventh of total length.
——— of ventral.....	$\frac{7}{10}$,	or one-sixth of total length.
——— of anal.....	$\frac{6}{10}$,	or one-eighth of total length.

Diameter of eye $\frac{7}{20}$ inch, or $\frac{2}{7}$ of the length of the head, $\frac{4}{10}$ inch from end of snout, $\frac{2}{10}$ apart, situated close to the upper margin of profile.

The profile rises very slightly from the snout to dorsal fin; the line of the abdomen is rather straight. Lower jaw slightly the longest. Superior maxillary bones extend as far backwards as the

anterior margin of the orbit. The openings of the nostrils rather wide apart, and opposite the upper fourth of the orbit. Præorbital entire. Præoperculum finely serrated on the posterior edge of its vertical limb, very slightly emarginate opposite the interoperculum, curved at its angle, where the serrations become coarser, but they decrease again as they approach the anterior end of the lower limb, which is slightly oblique. Sub- and inter-opercula entire. Operculum with two points, hardly to be termed spines, and terminating in an acute fleshy extremity. Scales on the opercula; but none either between or in front of the orbits. Two broad bands of scales pass over the shoulders, separated by two or three rows of smaller ones. Suprascapular denticulated; scapular and humeral entire.

Teeth. An external row of large sharp teeth in the lower jaw, and several villiform rows in the centre. Upper jaw the same; intermaxillaries crowded with small teeth *en velour*, and having two canines on either side, the external of which is curved and very large in comparison to the size of the fish.

Fins. Origin of dorsal and pectoral in a line, the latter reaching as far backwards as the anal; ventral slightly behind pectoral; anal arises opposite third soft ray of dorsal; pectoral pointed; soft portions of dorsal and anal rounded; caudal slightly emarginate; ventral pointed, first soft ray prolonged.

Dorsal spines rather strong: first $\frac{2}{10}$ inch; second $\frac{4}{10}$; third $\frac{5}{10}$; fourth very slightly longer; thence they decrease to the last, which is $\frac{4}{10}$ inch. Ventral spine weak, $\frac{9}{20}$ inch long. Anal, second spine much the longest and strongest; first $\frac{5}{20}$ inch; second $\frac{5}{10}$; third $\frac{9}{20}$.

Scales. Longest diameter from above downwards; above the lateral line they run in an ascending backward series of rows to the base of the dorsal until the end of that fin, when they pass parallel with back. Below the lateral line the first four rows run horizontally, terminating in the lateral line; the next five or six pass direct towards the caudal. Consequently the row commencing at the humerus is the superior one at the tail.

Lateral line passes parallel with the back in its upper third.

Colours. Back olive, shot with yellow. Abdomen yellow, with several horizontal brilliant golden lines; these lines are divided by a darker one running along the centre of each row of scales, so that each golden one is on parts of two. A large, very black mark exists on the lateral line, commencing at the twenty-second, and continued until the thirty-first scale; it extends below the lateral line for three rows, and above it for one and a half. Dorsal and pectoral olive; caudal and anal olive-yellow; ventrals golden. Iris golden.

Rare in Cochin. The foregoing was the only one obtained; a second was frequently searched for, but invariably without success.

MESOPRION RANGUS, Cuv. & Val.

B. vii. D. $\frac{10}{14}$. P. 16. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 16. $\frac{3}{3}$. L. l. 46. L. tr. $\frac{7}{15}$.

Length of specimens from 7 to 9 inches.

Very common; grow to a large size; are excellent eating.

MESOPRION SILLA00, Cuv. & Val.

B. vii. D. $\frac{10}{13}$. P. 16. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. l. 50. L. tr. $\frac{7}{12}$.

	inches.	
Length of specimens from	$11\frac{9}{10}$ to $19\frac{5}{10}$	inches.
——— of head	$5\frac{6}{10}$	or two-sevenths of total length.
——— of pectoral	$4\frac{5}{10}$	or one-fourth of total length.
——— of caudal	$3\frac{2}{10}$	or one-sixth of total length.
——— of base of dorsal	$7\frac{6}{10}$	or two-fifths of total length.
——— of base of anal	$2\frac{1}{10}$	or one-ninth of total length.
Height of head	$4\frac{2}{10}$	or one-fourth of total length.
——— of body	$5\frac{6}{10}$	or two-sevenths of total length.
——— of hard dorsal	2,	or two-nineteenths of total length.
——— of soft dorsal	$4\frac{8}{10}$	or one-fourth of total length.
——— of base of caudal	2,	or two-nineteenths of total length.
——— of ventral	3,	or two-thirteenths of total length.
——— of anal	$2\frac{1}{10}$	or one-ninth of total length.

Diameter of eye $1\frac{2}{10} \times 1$ inch, or $\frac{1}{5} \times \frac{1}{6}$ of length of head, $2\frac{1}{10}$ from end of snout, 1 inch apart.

Profile gradually rises to the dorsal; but a slight concavity exists over the nostrils. Lower jaw a little the longest. The superior maxillary bone extends as far backwards as opposite the anterior third of the orbit. Præoperculum, posterior limb nearly vertical in its upper half, which is entire, then emarginate to receive a knob of the interoperculum, and at this spot it is very finely serrated; angle rounded, with about six very blunt denticulations; lower limb horizontal and very short. Sub- and inter-opercula entire; a protuberance on the upper angle of the latter. Operculum with two blunted points; no spines. No scales between or before the orbits. Arched double row of scales over the nape very conspicuous. Suprascapular scale veined, but entire. Scapular and coracoid bones entire.

Teeth. Canines large, $\frac{3}{10}$ ths of an inch exposed; an external row of conical teeth in both jaws; two or three rows of villiform in intermaxillaries and upper jaw. A very few villiform teeth in lower jaw, and only in its anterior portion. Numerous and fine villiform teeth on vomer and palate.

Fins. Origin of dorsal and ventral in a line; pectoral slightly in advance; anal arises opposite first or second soft ray of dorsal; pectoral, pointed, does not reach so far as anal by $\frac{8}{10}$ ths of an inch; ventral pointed.

Dorsal spines not very strong, base of spinous portion $4\frac{4}{10}$ of total length; interspinous membrane rather deeply notched: first spine $\frac{7}{10}$ inch; second $1\frac{6}{10}$; third 2; fourth 2; fifth $1\frac{8}{10}$; thence they decrease to the ninth, which is $1\frac{1}{10}$; tenth $1\frac{3}{10}$. Ventral spine weak, $1\frac{5}{10}$ inch. Anal spines rather strong: first $\frac{5}{10}$ inch; second $1\frac{1}{10}$, and slightly the strongest; third $1\frac{3}{10}$.

Scales passing in longitudinal rows, both above and below the lateral line. Opposite the termination of the soft dorsal, they become slightly undulating in their course.

Lateral line passes parallel with the back in the upper quarter of the body.

Colours. These do not vary very much, except that in the young fish they are rather brighter; and also it must be noted that they soon commence to fade after the fish has been taken out of the water; then the brilliancy of its red decreases, and its back becomes rather brownish grey. Each scale is rather darker at its base than at its margin. Below the lateral line it is of a bright deep lake-colour, above of a brownish red, with the base of each scale of a greyish-ash or brown colour. Under surface of the throat and chest scarlet, with a shade of orange. Cheeks orange scarlet. A bright blue zigzag line passes along either side of the snout on the lower margin of the præorbital and suborbital ring of bones. Hard portion of dorsal brownish grey; soft, of an orange scarlet. Anal, hard portion greyish, soft scarlet. Caudal scarlet. Pectoral scarlet, stained with darker at its margins. Eye bluish grey, with a golden-red centre.

Common at Cochin; excellent eating; and grows to a large size.

MESOPRION RUBELLUS, Cuv. & Val.

B. vii. D. $\frac{10}{14}$. P. 16. V. $\frac{1}{5}$. A. $\frac{3}{9-9}$. C. 17 $\frac{4}{4}$. L. l. 46. L. tr. $\frac{7}{13}$.

inches.

Length of specimen	17 $\frac{1}{2}$.
——— of head	5 $\frac{4}{10}$, or two-sevenths of total length.
——— of pectoral	4 $\frac{3}{10}$, or one-fourth of total length.
——— of caudal	3 $\frac{2}{10}$, or two-elevenths of total length.
——— of base of dorsal	7 $\frac{3}{10}$, or two-fifths of total length.
——— of base of anal	2, or one-ninth of total length.
Height of head	4, or two-ninths of total length.
——— of body	5 $\frac{3}{10}$, or two-sevenths of total length.
——— of hard dorsal	2 $\frac{2}{10}$, or one-ninth of total length.
——— of soft dorsal	2, or one-ninth of total length.
——— of base of caudal	1 $\frac{8}{10}$, or one-tenth of total length.
——— of ventral	3, or one-sixth of total length.
——— of anal	2 $\frac{4}{10}$, or one-ninth of total length.

Diameter of eye $1 \frac{1}{10} \times \frac{9}{10}$ inch, or $\frac{1}{5} \times \frac{1}{6}$ of length of head, $\frac{9}{10}$ apart, $1 \frac{9}{10}$ from end of snout.

A very considerable rise from the snout to the commencement of the dorsal fin. Lower jaw very slightly the longest. Superior maxillary bones reach to opposite the anterior one-third of the orbit. Præoperculum almost vertical in the upper portion of its ascending limb; in the lower third (opposite the interoperculum) slightly emarginate, finely serrated in the whole of its extent; angle slightly rounded, with three or four blunt denticulations; lower limb oblique, entire. Sub- and inter-opercula entire. Two very blunt points to operculum; no spines. Suprascapular serrated. Scapular and coracoid entire. No knob to the interoperculum.

Teeth. Canines, exposed portion $\frac{2}{10}$ inch. An external series of large conical teeth in lower jaw, and also in the upper, but smaller.

Villiform teeth in both jaws; most numerous in the upper. Fine villiform teeth in vomer and palate.

Fins. Origin of dorsal, pectoral, and ventral on a line. Anal arises opposite about the third soft ray of dorsal.

Dorsal spines moderately strong; interspinous membrane very slightly notched; first dorsal spine $\frac{6}{10}$ inch; second $1\frac{9}{10}$; third $2\frac{2}{10}$; fourth a little shorter; and they decrease to the last, which is $1\frac{9}{10}$. Ventral spine weak, $1\frac{8}{10}$ inch. Anal spines, first $\frac{5}{10}$ inch; second 1, and much the strongest; third $1\frac{3}{10}$. Pectoral pointed, and reaching upwards of half an inch beyond the origin of the anal. Ventral pointed; first soft ray prolonged. Anal rather pointed. Caudal truncated.

Scales in horizontal lines, both above and below the lateral line.

Lateral line, in upper third of the body, following the curve of the back the whole way to just beyond the termination of the soft dorsal, when it proceeds direct to the caudal, which it reaches above its centre.

Colours. Back greyish brown. Chest orange. Abdomen and sides of a light violet, each scale tipped with white. Cheeks orange; scales also white on their exteriors. Eye silvery, with a golden rim round the pupil. Hard dorsal greyish; soft dorsal yellowish grey. Caudal brownish. Pectoral with a tinge of red. Anal, hard portion greyish; soft yellowish grey. Ventrals greyish, with an orange base.

Common; excellent eating.

MESOPRION FULVIFLAMMA, Forsk.

B. vii. D. $\frac{10}{14}$. P. 16. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 17. L. l. 43. L. tr. $\frac{7}{16}$.

Length of specimen $2\frac{2}{10}$ inches.

AMBASSIS COMMERSONII, Cuv. & Val.

Aranyee (Mal.).

B. vi. D. $7\frac{1}{10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 17. L. l. 33. L. tr. $\frac{5}{12}$.

Length of specimens from 3 to 7 inches.

Common in all pieces of fresh and brackish water. They are eaten by the natives.

AMBASSIS DUSSUMIERI, Cuv. & Val.

B. vi. D. $7\frac{1}{9}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{10}$. C. 17. L. l. 27. L. tr. $\frac{3}{6}$.

Length of specimen $2\frac{4}{10}$ inches.

Scales not so deciduous in this as in some of the other species.

Lateral line interrupted.

AMBASSIS NALUA, Buch. Ham. ?

Aranyee (Mal.).

B. vi. D. $7\frac{1}{10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 17. L. l. 30. L. tr. $\frac{5}{12}$.

Length of specimen $3\frac{1}{10}$ inches.

Inferior margin of interoperculum strongly denticulated : thus with the double denticulated edge of the præoperculum and the denticulations on the interoperculum there are three parallel lines of teething in this species. A sharp spine directed backwards at the posterior superior angle of the orbit ; and two or three more along its posterior edge, but separated from the first by a notch. Ventral spine comparatively long, reaching close to the origin of the anal, whilst its soft rays extend as far as the third anal spine.

Length of head one-third of the total ; height of body two-sevenths of total length ; second dorsal spine two-thirds the height of body ; second anal spine half the height of body.

THERAPON TRIVITTATUS, Buch. Ham.

Keetcha (Mal.).

B. vi. D. $\frac{12}{10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 15. L. l. 95. L. tr. $\frac{12}{24}$.

Length of specimens from $2\frac{6}{10}$ to $4\frac{4}{10}$ inches.

All the Therapons are indiscriminately termed *Keetcha*, and, unless by the poorest of the population, are utterly rejected as food, as they are reputed to prey on any corpses that may be floating in the backwater. They do not, in Cochin, attain to the size they are found in Madras.

THERAPON SERVUS, Bloch.

Keetcha (Mal.).

B. vi. D. 11/10. P. 13. V. 1/5. A. 3/8. C. 17. L. l. 82. L. tr. 12/27.

Length of specimens from $2\frac{1}{10}$ to 7 inches.

THERAPON THERAPS, Cuv. & Val.

Keetcha, Mal.

B. vi. D. 12/10. P. 15. V. 1/5. A. 3/8. C. 17. L. l. 50. L. tr. 10/14.

Length of specimen $4\frac{9}{10}$ inches.

PRISTIPOMA MACULATUM, Bloch.

B. vii. D. $11\frac{1}{11-14}$. P. 17. V. 1/5. A. 3/7. C. 17. L. l. 52. L. tr. 8/12.

Length of specimens from $2\frac{7}{10}$ to 7 inches.

Common ; not esteemed as food.

PRISTIPOMA HASTA, Bloch.

B. vii. D. 12/14. P. 17. V. 1/5. A. 3/7. C. 17. L. l. 47. L. tr. 7/10.

Length of specimens from $2\frac{5}{10}$ to $7\frac{3}{10}$ inches.

Common ; does not grow to a large size ; eaten by the natives.

DIAGRAMMA NIGRUM, Cantor.

Diagramma affine (Günther).B. vii. D. 14/16. P. 16. V. 1/5. A. 3/7. C. 17. L. l. 47.
L. tr. 10/17.Length of specimens from $8\frac{5}{10}$ to 21 inches.Excellent eating; usually comes in vast numbers about July, when the *Chrysophrys calamara*, up to that time abundant, has entirely disappeared.

LOBOTES SURINAMENSIS, Bloch.

Parrandee, Mal.B. vii. D. 12/15. P. 17. V. 1/5. A. 3/11. C. 18. L. l. 48.
L. tr. 8/16.Length of specimens from $2\frac{1}{10}$ to 13 inches.

Small specimens are very common, and always have the caudal deeply margincd with white. Large ones are good eating.

SCOLOPSIS JAPONICUS, Bloch.

B. vi. D. 10/9. P. 15. V. 1/5. A. 3/7. C. 17. L. l. 44.
L. tr. 5/12.Length of specimen $3\frac{1}{2}$ inches.

Rare.

SYNAGRIS GRAMMICUS, Day, sp. nov.

B. vi. D. 10/10. P. 17. V. 1/5. A. 3/7. C. 17. L. l. 48.
L. tr. 4/10.

	inches.	
Length of specimen	$7\frac{2}{10}$.	
——— of head	$1\frac{6}{10}$,	or two-ninths of total length.
——— of pectoral	$1\frac{4}{10}$,	or one-fifth of total length.
——— of caudal	$1\frac{9}{10}$,	or one-fourth of total length.
——— of base of dorsal	$2\frac{6}{10}$,	or one-third of total length.
——— of base of anal	$\frac{8}{10}$,	or one-ninth of total length.
Height of head	$1\frac{4}{10}$,	or one-fifth of total length.
——— of body	$1\frac{8}{10}$,	or one-fourth of total length.
——— of hard dorsal	$\frac{7}{10}$,	or one-tenth of total length.
——— of soft dorsal	$\frac{8}{10}$,	or one-ninth of total length.
——— of base of caudal	$\frac{9}{20}$,	or one-eighth of total length.
——— of ventral	$\frac{8}{10}$,	or one-ninth of total length.
——— of anal	$\frac{7}{10}$,	or one-tenth of total length.

Diameter of eye $\frac{5}{10} \times \frac{9}{20}$ inch, or $\frac{1}{3} \times \frac{1}{4}$ of length of head.

Nape short; profile convex from snout to dorsal. Lower jaw longest. Upper jaw reaches to anterior third of orbit. Præoperculum, posterior limb nearly vertical, and finely serrated in its lower half, whilst from between each serration a fine furrow runs a short way downwards and forwards; angle rounded and entire; lower limb horizontal and entire; the lower part of the præoperculum is

furrowed. Sub- and inter-opercula entire. Operculum ending in a blunt point. Præorbital large, entire, but furrowed downwards and backwards. Upper margin of orbit close to profile. Shoulder-bones entire. Three rows of scales between the orbit and margin of the præoperculum; no scales between or before the orbits. Intermaxillaries nearly four-tenths of an inch in length, and protrusible. Nostrials close to anterior superior margin of the eye, not far apart, anterior rather the largest. Three oval facets in anterior half of the under surface of the lower jaw, the posterior of which is the largest.

Teeth. An external row of six curved conical teeth in intermaxillary bones, with villiform ones behind and extending all along both upper and lower jaw, in which last they are equal in size, close together, and in about five rows.

Fins. Dorsal commences over pectoral, which is slightly in advance of ventral. Anal arises opposite about second soft ray of dorsal.

Dorsal, spinous portion $1\frac{4}{10}$ inches in extent; interspinous membrane not notched. Spines weak: first $\frac{4}{10}$ inch; second $\frac{5}{10}$; third $\frac{6}{10}$; they continue much the same to the tenth, which is slightly more. Ventral spine weak, $\frac{4}{10}$ inch; first soft ray prolonged. Anal spines weak: first $\frac{5}{20}$ inch; second $\frac{1}{20}$; third $\frac{1}{20}$. The hard portion of the dorsal and anal, and also a part of the soft portion, can be laid flat in a groove on the back. Caudal deeply emarginate, the first and second rays on either side being prolonged. Pectoral pointed, reaching as far as the first soft ray of anal.

Scales large, arranged in longitudinal rows; none on any of the fins except the base of pectoral and caudal. The scales above the lateral line are rather smaller than those below it.

Lateral line runs parallel with the back in the upper fifth of the body.

Colours. Of a yellowish ground-colour, with reddish longitudinal lines. Upper portion of head and opercula of a dull reddish colour; throat, chin, and chest yellowish; back dull reddish, with darker longitudinal lines running along the centre of each row of scales. Below the lateral line, ground-colour yellowish, and the longitudinal lines not so deep in colour as those above. Dorsal fin yellowish, with a grey base and pinkish exterior. Caudal reddish, stained at the tip with grey. Anal yellowish, with a grey base, and two reddish stripes along the centre of its foremost part. Ventrals yellowish, with a grey base and yellow centre. Pectoral reddish yellow. Eyes golden.

Rare at Cochin.

UPENEOIDES VITTATUS, Forskål.

Cheerul (Mal.).

B. iv. D. 8 $\frac{1}{8}$. P. 17. V. $\frac{1}{5}$. A. 7. C. 15. L. l. 38.
L. tr. $\frac{3}{5}$.

Length of specimens from $3\frac{5}{10}$ to $6\frac{3}{10}$ inches.

Common.

CHRYSOPHRYS CALAMARA, Cuv. & Val.

Aree (Mal.).B. vi. D. 11/11. P. 15. V. 1/5. A. 3/8. C. 17. L. 1. 45.
L. tr. 5/10.

Length of specimen 9 inches.

Very common until July, when they give place to the *Diagramma nigrum*: both are known as the "Black Rock-fish." They are excellent eating.

CHRYSOPHRYS HASTA, Bloch, Schn.

B. vi. D. 11/11. P. 15. V. 1/5. A. 3/8. C. 17. L. 1. 48.
L. tr. 5/9.Length of specimen $5\frac{3}{10}$ inches.Rare; whilst the *C. sarba*, so common at Madras, seems unknown at Cochin.

CHÆTODON PRETEXTATUS, Cantor.

B. vi. D. $\frac{12}{27}$. P. 15. V. 1/5. A. 3/20. C. 17.Length of specimens from $3\frac{1}{10}$ to $3\frac{3}{10}$ inches.

Common for about a fortnight in June, after the commencement of the monsoon. They are taken in the Chinese nets at the side of the river. Never much exceed 3 or 4 inches in length. They are not esteemed by even the natives for eating.

HENIOCHUS MACROLEPIDOTUS, Artedi.

Purroamee (Mal.).B. v. D. 11/25. P. 17. V. 1/5. A. 3/18. C. 17. L. 1. 60.
L. tr. 9/22.Length of specimens from $2\frac{6}{10}$ to $4\frac{5}{10}$ inches.

Common at times; are not found large.

SCATOPHAGUS ARGUS, L. Gm.

Nutchar char (Mal.).

B. vi. D. 10 1/16. P. 15. V. 1/5. A. 4/14. C. 16.

Length of specimens from $1\frac{1}{10}$ to $4\frac{6}{10}$ inches.

Only eaten by the lower classes, as they are reputed to be very foul feeders.

EPHIPPIUS ORBIS, Bloch.

B. vi. D. 9/19. P. 19. V. 1/5. A. 3/5. C. 19.

Length of specimen $3\frac{8}{10}$ inches.

Rare at Cochin.

DREPANE PUNCTATA, L. Gm.

Pündthee (Mal.).

B. vi. D. 8/20. P. 17. V. 1/5. C. 3/17. L. 1. 50. L. tr. 14/33.

Length of specimen from $2\frac{8}{10}$ to 6 inches.

Not uncommon in Cochin. At Aden, in February 1864, very fine specimens were brought by the fishermen for sale.

PTEROIS VOLITANS, L. Gm.

Purrooah (Mal.).

B. vii. D. $12\frac{1}{10-11}$. P. 14. V. 1/5. A. 3/6. C. 13.

Length of specimens from $7\frac{3}{10}$ to $7\frac{5}{10}$ inches.

Not uncommon.

PTEROIS MILES, Bennett.

P. miles, Cantor.

B. vii. D. $12\frac{1}{11-12}$. P. 12. V. 1/5. A. 3/7. C. 14.

Length of specimens from $10\frac{1}{2}$ to $11\frac{1}{2}$ inches.

Head. Between and internal to the two nasal orifices is a sharp spine, directed upwards and backwards; there are some roughnesses along the upper margin of the orbit (which in old specimens become spiniferous), and one large spine at the posterior superior angle of the orbit. The temporal ridge, commencing about the centre of the posterior margin of the orbit, is spiny in the whole of its course towards the lateral line. The space between the orbits is shallow, and rather concave from side to side; down its centre runs a deep groove, continued anteriorly as far as the intermaxillary bones, whilst posteriorly it expands over the occiput, where it is bordered on either side by an outwardly curved blade-like crest, flattened from side to side, and which terminates in its posterior superior part in two large flat spines; these in old specimens become several badly marked spines. The ridge on the præorbital and infraorbital bones is spiny; it proceeds downwards over the cheeks towards the angle of the præoperculum, from which arise three spines, the superior of which is directed backwards, the two inferior backwards and downwards. In old subjects this ridge is very rugged, and, instead of having a single row of spines, it has two or three rows of smaller ones, consequently much increasing its width. At the centre of the supraorbital ridge is a prominence, from which arises a fleshy filament in young specimens, which is half the diameter of the eye, but appears to become shorter with age: there is generally another at the angle of the mouth, and some others at the inferior margin of the præoperculum.

Mouth horizontal; superior maxillary bones do not reach as far as the anterior margin of the orbit. Præoperculum, posterior limb slightly oblique, angle rounded, and with three large spines; lower limb nearly horizontal, entire. Sub- and inter-opercula entire. Operculum having a blunt spinous extremity. Under surface of lower jaws grooved. Shoulder-bones entire in old specimens; two spines in upper portion of suprascapular.

This fish arrives at Cochin in the commencement of the monsoon; but it is not common. From one I took twenty-one specimens of

the *Atherina forskålii*, each from 2 to 3 inches in length; so gorged was it (its entire length being only $11\frac{1}{2}$ inches) that the tail of one was protruding from its mouth.

MINOUS MONODACTYLUS, Bl., Schn.

B. vii. D. $\frac{9-11}{13-9}$. P. 11. V. $\frac{1}{5}$. A. 9—11. C. 10.

Length of specimens from $2\frac{5}{10}$ to $2\frac{7}{10}$ inches.

Very common.

PROSOPODASYS DRACÆNA, Cuv. & Val.

B. vii. D. $3\frac{9}{8}$. P. 13. V. $\frac{1}{5}$. A. $\frac{3}{6}$. C. 12.

Length of specimens from $2\frac{3}{10}$ to $2\frac{5}{10}$ inches.

Common.

PLATYCEPHALUS INSIDIATOR, Forsk.

B. vii. D. $1\frac{7}{13}$. P. 17. V. $\frac{1}{5}$. A. 13. C. 15. L. r. 94.
L. tr. $\frac{12}{24}$.

Length of specimen 13 inches.

Common; eaten by the lower classes.

PLATYCEPHALUS MALABARICUS, Cuv. & Val.

B. vii. D. $1\frac{8}{11}$. P. 19. V. $\frac{1}{5}$. A. 12. C. 15. L. r. 85.
L. tr. $\frac{9}{20}$.

Length of specimen $10\frac{8}{10}$ inches.

Common. Both this and the last species, directly they are caught, are knocked on the head with a wooden mallet. They are known as the "Crocodile-fish."

SILLAGO SIHAMA, Forsk.

Cuddeerah (Mal.). Whiting.

B. vi. D. $11\frac{1}{22}$. P. 16. V. $\frac{1}{5}$. A. $\frac{1}{23}$. C. 17. L. l. 74. L. tr. $\frac{7}{14}$.

Length of specimens from $3\frac{2}{3}$ to $11\frac{6}{10}$ inches.

Common; good eating.

UMBRINA DUSSUMIERI, Cuv. & Val.

B. vii. D. $10\frac{1}{24}$. P. 17. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 17. L. l. 48. L. tr. $\frac{7}{19}$.

Length of specimens from $5\frac{1}{10}$ to $5\frac{9}{10}$ inches.

Rare.

SCIÆNA DIACANTHUS, Lacép.

Vüdah (Mal.).

B. vii. D. $10\frac{1}{23}$. P. 17. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 17. L. r. 53. L. tr. $\frac{10}{14}$.

Length of specimens from $5\frac{5}{10}$ to $15\frac{5}{10}$ inches.

Very common, and good eating.

The *Nella katchelée* of Russell, well represented in his plate,

no. 115, as the female of this fish, appears to me as requiring still further inquiry. The *S. diacanthus* is one of the most common fish in Cochin; but I only procured three specimens of the latter, which were as follows:—

B. vii. D. $10\frac{1}{23-24}$. P. 15. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 15. L. r. 45. L. tr. $\frac{7}{17}$.
Length of specimens from $2\frac{7}{10}$ to $6\frac{1}{10}$ inches.

SCIÆNA MACULATA, Bl., Sch.

B. vii. D. $10\frac{1}{24}$. P. 16. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 17. L. l. 45. L. tr. $\frac{11}{16}$.
Length of specimens from $4\frac{3}{10}$ to $4\frac{8}{10}$ inches.
Air-bladder with fourteen or fifteen lateral processes on either side.
Not common; not considered good eating.

SCIÆNA DUSSUMIERI, Cuv. & Val.

B. vii. D. $10\frac{1}{29}$. P. 18. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 15. L. l. 52. L. tr. $\frac{6}{15}$.
Length of specimens from $5\frac{6}{10}$ to $6\frac{5}{10}$ inches.

SCIÆNA HYPOSTOMA, Bleeker.

B. vii. D. $9\frac{1}{31}$. P. 15. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 15. L. l. 45. L. tr. $\frac{6}{11}$.
Length of specimen $4\frac{8}{10}$ inches.

OTOLITHUS RUBER, Bl., Schn.

B. vii. D. $10\frac{1}{30}$. P. 17. V. $\frac{1}{5}$. A. $\frac{2}{7}$. C. 17. L. l. 50. L. tr. $\frac{7}{17}$.
Length of specimen $8\frac{5}{10}$ inches.
Rare; not found of a large size.

POLYNEMUS HEPTADACTYLUS, Cuv. & Val.

B. vii. D. $8\frac{1}{12}$. P. 15 vii. V. $\frac{1}{5}$. A. $\frac{3}{12}$. L. l. 50. L. tr. $\frac{5}{11}$.
Length of specimens from $4\frac{2}{10}$ to $4\frac{3}{10}$ inches.
Very common in the monsoon time; but they do not appear ever to exceed 4 or 5 inches in length.

POLYNEMUS SEXTARIUS, Bloch.

B. vii. D. $8\frac{1}{12}$. P. 15 vi. V. $\frac{1}{5}$. A. $\frac{3}{12}$.
Length of specimens $2\frac{4}{5}$ inches.
For several days during the monsoon they swarmed into the Cochin River; but all captured were young.

POLYNEMUS INDICUS, Shaw.

B. vii. D. $8\frac{1}{13}$. P. 20 v. V. $\frac{1}{5}$. A. $\frac{2}{11-12}$. C. 17. L. l. 62.
L. tr. $\frac{7}{13}$.
Length of specimens from $4\frac{2}{10}$ to $7\frac{5}{10}$ inches.

POLYNEMUS TETRADACTYLUS, Shaw.

B. vii. D. $8\frac{1}{15}$. P. 16 iv. V. $\frac{1}{5}$. A. $\frac{2}{16}$. C. 17. L. l. 75. L. tr. $\frac{10}{14}$.

Length of specimens from $9\frac{8}{10}$ to 15 inches.

This fish grows to a very large size; and in the months of December and January numbers are captured by trolling. The bait is a small fish; and the hook is attached to the line by a piece of twisted brass wire. The line is thrown, direct from the hand, a distance of at least 20 or 30 yards into the breakers. Fish of several feet in length are thus caught by coolies after their working-hours.

Common, and excellent eating.

SPHYRÆNA JELLO, Cuv. & Val.

Cheelahoo (Mal.).

B. vii. D. $5\frac{1}{9}$. P. 14. V. $\frac{1}{5}$. A. $\frac{1}{8}$. C. 17.

Length of specimens from $6\frac{2}{10}$ to $8\frac{5}{10}$ inches.

TRICHIURUS MALABARICUS, Day, sp. nov.

B. vii. D. 132. P. 11.

Length of specimens from $10\frac{5}{10}$ to 12 inches.

— of head	$1\frac{7}{10}$,	or one-seventh of total length.
— of pectoral	$\frac{5}{10}$,	or one twenty-fourth of total l.
Height of body	$\frac{7}{10}$,	or one-seventeenth of total length.
— of head	$\frac{6}{10}$,	or one-twentieth of total length.

Diameter of eye $\frac{7}{20}$ inch, or $\frac{1}{5}$ of length of head; $\frac{5}{10}$ inch from end of snout, $\frac{2}{10}$ apart.

Lower jaw the longest. Superior maxillary bones reach to opposite first quarter of orbit. Operculum finely lined, extends backwards to above the pectoral fin. Præorbital large, entire, lined. Opening to nostril large, rather close to the anterior margin of the orbit, the upper margin of which is nearly horizontal, and close to the profile of the head.

Teeth. In intermaxillary bones three large canines; the anterior the longest, curved, directed forwards and downwards, barbed at its extremity; the two posterior ones, arising from the posterior margin of the intermaxillaries, are curved backwards and downwards; they are also slightly barbed at their extremities. An external row of about five fine teeth in intermaxillaries. A single row of about seven large pointed teeth, flattened from side to side, in maxillaries. In lower jaw a single row of pointed teeth, similar to those in superior maxillary, but smaller.

Dorsal fin commences to arise opposite commencement of operculum. Spines weak; they gradually increase in length until they are $\frac{6}{10}$ ths of an inch, or nearly as long as the height of the body. Anal spines truncated at their extremity, and only visible with the aid of a magnifying-glass.

Lateral line curves downwards behind the pectoral, and runs at

first along the lower third of the body; subsequently it descends lower.

Colours. Silvery white, with a slight pinkish tinge; back a little the darkest. The first three or four dorsal spines have a black spot upon them; a line of greenish black, in very fine dots, extends along the upper third of the dorsal in its whole extent. Tail with a black margin. Eyes silvery. Tongue smooth, and of a golden tinge. Pectoral greyish yellow. Skin diaphanous.

Not rare at Cochin.

SCOMBER KANAGURTA, Cuv. & Val.

Ila (Mal.). Indian Mackerel.

B. vi. D. $10\frac{1}{11}$ v. P. 21. V. $1\frac{1}{5}$. A. $1\frac{1}{11}$ v. C. 25.

Length of specimen $7\frac{5}{10}$ inches.

These fish, which average about $7\frac{1}{2}$ inches in length, are captured in enormous quantities from January until May. Although very excellent eating, they are not often brought to the tables of Europeans, as they are reputed to be rather bitter; therefore those captured are commonly salted, dried in the sun, and exported in bundles of about 1000 each to Ceylon, where they are extensively bought for the coolies in the coffee-plantations.

Many Ceylonese come over for the Mackerel season. Thousands of these fish are frequently landed daily and salted. The first process consists in a coolie making one cut with a sharp knife along their back-bone, from the head to the tail, and then a second down their ventral surface, exposing their intestines. They are then tossed over to a woman, who, having removed their insides, throws them into a basket having two handles, which, when half full, is carried by two men to the sea-shore, where the fish are washed without being removed. Women and children rapidly put some black salt into each cut, and throw the fish into a boat close behind them (on the shore), in which there is brine; there they remain for a few hours, and are subsequently spread out in the sun, dried, and packed in square bundles of about 1000 each for export.

CYBIUM GUTTATUM, Bl., Schn.

Arrakeeah (Mal.). Seir-fish.

B. vii. D. $16\frac{16}{20}$ ix. P. 15. V. $1\frac{1}{5}$. A. 20 viii. C. 26.

Length of specimen 23 inches.

The Seir-fish abound off Cochin, where they are captured from October throughout the whole of the cold months. They are excellent eating, but should be cooked when quite fresh. They salt well, besides being amongst the best fish for Tamarind-fish. Large ones are rather coarse for eating.

CYBIUM COMMERSONII, Lacép.

Chumbum (Mal.).

B. vii. D. $16\frac{2}{15}$ ix. P. 20. V. $1\frac{1}{5}$. A. $2\frac{1}{16}$ x.

Length of specimen 12 inches.

ELACATE NIGRA, Bloch.

B. vii. D. $8/34-38$. P. 21. V. $1/5$. A. 26-28. C. 17.
Length of specimens 12 inches.

ECHENEIS NAUCRATES, Linn.

Putthoo muday (Mal.).

B. vi. D. 39. P. 20. V. $1/5$. A. $3/34$. C. 17. Disks 22.
Length of specimens from 8 to $11\frac{3}{10}$ inches.

They are generally captured in Cochin about the size of the present specimens, and are not rare. One of these was taken from the back of a Shark, to which they appear to frequently attach themselves.

STROMATEUS ARGENTEUS, Bloch.

B. vi. D. $7\frac{1}{39}$. P. 27. A. $6\frac{1}{41}$.

Length of specimen 8 inches.

STROMATEUS ATOUS, Cuv. & Val.

Vella arwoolee (Mal.). White Pomfret.

B. vi. D. $1/43$. P. 23. A. 40. C. 17.

Length of specimen $11\frac{1}{2}$ inches.

This species of Pomfret is esteemed the best in Cochin, where it is by no means uncommon during the south-west monsoon.

STROMATEUS NIGER, Bloch.

Kar arwoolee (Mal.). Black Pomfret.

B. vii. D. $5/42$. P. 22. A. $3/39$. C. 19.

Length of specimen from $3\frac{3}{10}$ to $14\frac{8}{10}$ inches.

This fish comes to Cochin about the same time as the *S. atous*, to which it is considered slightly inferior. It arrives in droves, and disappears as suddenly as it comes.

In the young specimen, $3\frac{3}{10}$ inches in length, the ventrals are $\frac{4}{10}$ inch in length. The hidden spines of dorsal and anal are apparent, the numbers being D. $5/40$, A. $3/37$.

Colours grey; dorsal and anal fins black; tail yellow, with three brown cross bands, one of which is at its base.

STROMATEUS CINEREUS, Bloch.

B. vii. D. $7\frac{1}{38}$. P. 24. A. $5\frac{1}{32}$. C. 19.

Length of specimen $3\frac{2}{10}$ inches.

CARANX ROTTLERI, Bloch.

B. vii. D. $8\frac{1}{10}$ ix. P. 21. V. $1/5$. A. $2\frac{1}{8-9}$ viii. C. 18. L. 1. 55.

Length of specimens from 4 to 9 inches.

This fish is common, but not often seen above 9 inches in length. It is employed as food more by the natives than the European population; for the last it is not held in much esteem.

CARANX HIPPOS, Linn.

Caranx heberi, Bennett.B. vii. D. $8 \frac{1}{20}$. P. 20. V. $1/5$. A. $2 \frac{1}{16}$. C. 21. L. l. 29.Length of specimen $8 \frac{6}{10}$ inches.

After death, the deep black point of the upper lobe of the caudal fades.

Very common; comes into the mouth of the river; but the largest specimens, which attain to $2 \frac{1}{2}$ feet, are captured in the deep sea. They are most excellent eating. When caught, they give a grunt like a young pig; and this is continued, should they be moved, as long as they have any life remaining.

They are first captured at the end of the south-west monsoon, and continue off Cochin during the whole of the cold months.

CARANX ATROPUS, Bl., Schn.

B. vii. D. $8 \frac{1}{22}$. P. 19. V. $1/5$. A. $2 \frac{1}{18}$. C. 16. L. l. 32.Length of specimen $7 \frac{2}{10}$ inches.

CARANX MELANOSTETHOS, Day, sp. nov.

B. vii. D. $8 \frac{1}{23}$. P. 19. V. $1/5$. A. $2 \frac{1}{19}$. C. 19. L. l. 28.Length of specimens from. . . $6 \frac{7}{10}$ to $6 \frac{8}{10}$ inches.——— of head $1 \frac{5}{10}$, or two-ninths of total length.——— of pectoral $1 \frac{3}{10}$, or one-fifth of total length.——— base of first dorsal. $\frac{8}{10}$, or two-seventeenths of total l.——— base of second dorsal $2 \frac{2}{10}$, or one-third of total length.——— of caudal $1 \frac{5}{10}$, or two-ninths of total length.Height of body $1 \frac{8}{10}$, or one-fourth of total length.——— of head $1 \frac{4}{10}$, or one-fifth of total length.——— of first dorsal. $\frac{6}{10}$, or one-eleventh of total length.——— of second dorsal. $\frac{7}{10}$, or one-tenth of total length.——— of ventral $\frac{7}{10}$, or one-tenth of total length.——— of anal $\frac{6}{10}$, or one-eleventh of total length.——— of base of caudal $\frac{5}{20}$, or two twenty-sevenths of total.

Diameter of eye $\frac{5}{10} \times \frac{4}{10}$ inch, or $\frac{1}{3} \times \frac{1}{4}$ of length of head; $\frac{4}{10}$ inch apart, $\frac{4}{10}$ from end of snout. The membranous curtain to the eye extends nearly one-fifth across its diameter on either side.

Head. Upper jaw protrusible for $\frac{2}{10}$ ths of an inch. Lower jaw very slightly the longest. Superior maxillary extends backwards as far as the anterior margin of the orbit. Præorbital small, and has two straight raised lines on its posterior part. Præoperculum oblique, angle rounded, and the inferior margin convex; suboperculum large; it and other opercular bones entire. Nostrils situated nearly 2 lines in front of orbit, with a curved nasal arch over them.

Teeth. In intermaxillaries and superior half of upper jaw from two to three bands of fine villiform teeth; the same are also perceptible in the lower jaw. A triangular space (convex anteriorly) of

rather sharp teeth in vomer, distinct from which, but commencing close to its posterior margin, is a straight single row of sharp teeth, the two thus covering a somewhat T-shaped spot. No teeth on palatines.

Fins. Pectoral rather in advance of the origin of the dorsal and ventral. Anal arises under second dorsal: a deep membranous sheath to second dorsal and anal. First dorsal triangular; second dorsal highest in front, where it exceeds the height of the first dorsal. Pectoral falciform, reaching to nearly opposite anal. Caudal deeply lobed. Dorsal spines weak; first $\frac{3}{10}$, second $\frac{6}{10}$ inch; third slightly higher; thence they decrease. First ray of second dorsal the longest. Pectoral fifth or sixth ray the longest. Ventral spine weak. Of the two anal spines, the second is the longest and strongest. Spine of anal fin weak; first ray the longest.

Scales cover the whole of the body, under the eye, and slightly the upper part of the operculum.

The lateral line has a very moderate curve in the first portion of its course, and opposite the eighth dorsal ray it begins to pass straight; but the laminated scales do not commence until opposite the thirteenth ray. They are well marked, but not so strong as in many species of *Caranx*; in their widest portion they are not above 2 lines.

Colours. Back of a leaden blue, which below the lateral line becomes silvery white. The fore part of the chest, throat, the opercula, summit of head, and upper jaw are of a deep brown, almost black, which sometimes remains and sometimes fades; over all these places there are numerous black dots and spots. Fins tinged with yellow; second dorsal deeply stained with black in its first eight rays, and having a white summit; the whole of the rest of that fin stained with brown, and dotted with fine brown-black points. Eyes silvery; curtain brown.

This is not a very rare fish in the cold season; and small specimens of 6 and 7 inches are captured at the mouth of the river, but in the deep sea much larger ones are taken. It is good eating.

CARANX KURRA, Cuv. & Val.

B. vii. D. 8 $\frac{1}{30}$ I. P. 25. V. $\frac{1}{5}$. A. 2 $\frac{1}{27}$ I. C. 17. L. l. 33.

Length of specimen 4 $\frac{5}{10}$ inches.

This is Russell's fish, plate 139, not Günther's, from which it may be readily distinguished by having a double row of sharp teeth along the centre of its tongue.

Not rare at Cochin.

CARANX XANTHURUS, Cuv. & Val.

Batta parra (Mal.).

B. vii. D. 8 $\frac{1}{24}$. P. 20. V. $\frac{1}{5}$. A. 2 $\frac{1}{19}$. L. l. 45.

Length of specimen 5 $\frac{6}{10}$ inches.

CARANX SPECIOSUS, Forsk.

Batta courchee (Mal.).B. vii. D. $8\frac{1}{19-20}$. P. 20. V. $\frac{1}{5}$. A. $2\frac{1}{16-17}$. L. l. 34.Length of specimens from $4\frac{4}{10}$ to $4\frac{5}{10}$ inches.

Several rows of villiform teeth in the upper jaw, and an external row of larger pointed ones. In lower jaw, a single row of irregular-sized teeth. Teeth on vomer and palate.

CARANX ARMATUS, Forsk.

B. vii. D. $7\frac{1}{21}$. P. 19. V. $\frac{1}{5}$. A. $2\frac{1}{17}$. C. 19. L. l. 20.Length of specimen $2\frac{1}{10}$ inches.

CARANX CILIARIS, Bloch.

B. vii. D. $6\frac{1}{19}$. P. 18. V. $\frac{1}{5}$. A. $2\frac{1}{16}$. C. 19. L. l. 15.Length of specimen $6\frac{5}{10}$ inches.

CARANX GALLUS, Linn.

B. vi. D. $1/19$. P. 17. V. $1/5$. A. $1/16$. C. 19. L. l. 10.Length of specimen $13\frac{4}{10}$ inches.

CHORINEMUS LYSAN, Forsk.

B. viii. D. $7\frac{1}{20}$. P. 19. V. $1/5$. A. $2\frac{1}{18}$.Length of specimen $19\frac{8}{10}$ inches.The *Chorinemi* come to Cochin in great numbers about July; they are esteemed good eating, but are rather dry, especially the larger ones. They salt well.

CHORINEMUS TALA, Cuv. & Val.

B. viii. D. $7\frac{1}{20}$. P. 20. V. $1/5$. A. $2\frac{1}{17}$. C. 19.Length of specimen $8\frac{8}{10}$ inches.

CHORINEMUS SANCTI-PETRI, Cuv. & Val.

Pallagay (Mal.).B. viii. D. $7\frac{1}{21}$. P. 17. V. $\frac{1}{5}$. A. $2\frac{1}{18}$. C. 15.Length of specimens from 7 to $8\frac{3}{10}$ inches.

Common; but does not appear to be found of a large size.

TRACHYNOTUS OVATUS, Linn.

B. vii. D. $6\frac{1}{19}$. P. 17. V. $1/5$. A. $2\frac{1}{17}$. C. 17.Length of specimen from $4\frac{8}{10}$ to 5 inches.

Not rare; but does not appear to exceed 6 or 7 inches in length.

TRACHYNOTUS BAILLONI, Lacép.

Vella oodoo or *Parruvu* (Mal.).B. vii. D. $6\frac{1}{23}$. P. 17. V. $1/5$. A. $2\frac{1}{23}$. C. 17.Length of specimen $8\frac{5}{10}$ inches.

Uncommon; are usually captured by cast-nets in the surf. The fishermen assert that they always swim in the surf, are very rarely captured in the deep sea, never in the river.

PSETTUS ARGENTEUS, Linn.

B. vi. D. $\frac{8}{28-29}$. P. 16. V. $1/3$. A. $3/28$. C. 17. L. tr. 75.

Length of specimens from $3\frac{1}{10}$ to 6 inches.

Mostly found in the monsoon time.

PSETTUS FALCIFORMIS, Lacép.

B. vii. D. $8/27$. P. 17. A. $3/29$. C. 17. Scales, upwards of 120 rows.

Length of specimen $4\frac{6}{10}$ inches.

PLATAX TEIRA, Cuv. & Val.

B. vi. D. $5/32$. P. 16. V. $1/5$. A. $3/24$. C. 17. L. r. 86.

Length of specimen, to end of caudal, $3\frac{2}{10}$ inches.

EQUULA INSIDIATRIX, Bloch.

Paarl coorchee (Mal.).

B. iv. D. $9/16$. P. 15. V. $1/5$. A. $3/14$. C. 19.

Length of specimen $2\frac{9}{10}$ inches.

Exceedingly common; and, along with other species of the same genus, large numbers are kept for consumption during the monsoon; for, owing to the small amount of intestines and the compressed form of their bodies, very little salt is necessary for their preservation. As to the poorer natives the salt-tax is great, they evade it along the coast by opening and cleaning these little fish, soaking them in the sea, and then drying them in the sun. That they have become semi-putrid by the monsoon time is not to be wondered at; neither can we be surprised at the numerous cases of dysentery and diarrhœa to which such diet gives rise.

EQUULA DAURA, Cuv.

B. v. D. $8/15$. P. 17. V. $1/5$. A. $3/14$. C. 17.

Length of specimen 3 inches.

EQUULA EDENTULA, Bloch.

B. v. D. $8/16$. P. 17. V. $1/5$. A. $3/14$. C. 17.

Length of specimen $3\frac{7}{10}$ inches.

LACTARIUS DELICATULUS, Bloch, Schn.

Purruwah (Mal.).

B. vii. D. $7-8\frac{1}{22}$. P. 17. V. $1/5$. A. $\frac{3}{26-28}$. C. 17.

Length of specimens from $3\frac{1}{10}$ to $6\frac{7}{10}$ inches.

Arrives in shoals in February and March. Are esteemed by the natives good eating, whether fresh or salted; they do not attain any size.

- *Gobius giuris*, Buch. Ham.

Wartee poollah or *Pooan* (Mal.).

B. iv. D. 6 $\frac{1}{9}$. P. 20. V. $\frac{4}{4}$. A. $\frac{1}{8}$. C. 17. L. l. 30 to 34.

Length of specimens from 3 to $13\frac{5}{10}$ inches.

Very common in all the fresh and even brackish waters. In the monsoon time, when the freshes remove the saltness from the river, these Gobies are commonly caught in the Chinese nets or by baits. In the fort-ditch they grow to about $1\frac{1}{2}$ foot in length, and, though highly esteemed by the natives for food, are insipid, and even muddy in some waters. They are very voracious, taking a bait freely.

Gobius viridipunctatus, Cuv. & Val.

B. iv. D. 6 $\frac{1}{10}$. P. 17. V. $\frac{1}{5}$. A. $\frac{1}{9}$. C. 15. L. l. 28. L. tr. 13.

Length of specimen $4\frac{9}{10}$ inches.

These beautifully emerald-green-spotted Gobies, though not common, are not rare. They are caught in the sea-fisheries, and also occasionally in the river.

Gobius acutipinnis, Cuv. & Val.

B. iv. D. 6 $\frac{1}{11}$. P. 19. V. $\frac{4}{4}$. A. $\frac{1}{11}$. C. 19. L. l. 25. L. tr. 6.

Length of specimen $3\frac{6}{10}$ inches.

Usually captured in the river, about July. They do not appear to grow to any size.

Gobius malabaricus, Day, sp. nov.

B. iv. D. 6 $\frac{1}{10}$. P. 13. V. $\frac{4}{4}$. A. $\frac{1}{10}$. C. 13. L. l. 50. L. tr. 10.

Length of specimen from ..	$2\frac{4}{10}$ to $2\frac{8}{10}$ inches.
——— of head	$\frac{6}{10}$, or one-fifth of total length.
——— of pectoral	$\frac{9}{20}$, or one-sixth of total length.
——— of caudal	$\frac{7}{10}$, or one-fourth of total length.
——— of base of 1st dorsal	$\frac{3}{10}$, or one-ninth of total length.
——— of base of 2nd dorsal	$\frac{7}{10}$, or one-fourth of total length.
——— of base of anal	$\frac{6}{10}$, or one-fifth of total length.
Height of head	$\frac{4}{10}$, or one-seventh of total length.
——— of body	$\frac{6}{10}$, or one-fifth of total length.
——— of hard dorsal	$\frac{7}{20}$, or one-eighth of total length.
——— of soft dorsal	$\frac{7}{20}$, or one-eighth of total length.
——— of base of caudal ..	$\frac{5}{20}$, or one-eleventh of total length.
——— of ventral	$\frac{6}{10}$, or one-fifth of total length.
——— of anal	$\frac{3}{10}$, or one-ninth of total length.

Diameter of eye $\frac{1}{10}$ inch, or $\frac{1}{6}$ length of head; $\frac{1}{10}$ inch from end of snout, $\frac{1}{20}$ apart.

The profile does not rise very much to the first dorsal. Snout obtuse; its upper profile descends abruptly. Cleft of mouth rather

oblique; lower jaw the longest. The superior maxillary bone extends as far backwards as the anterior third of the orbit. Rather a strong prominent crest at the nape; the bony bridge between the orbits narrow, with a low crest running along its centre. Orbits very closely approximating at upper surface; a well-developed projecting angle at their anterior and posterior margins; the anterior the strongest. A bony ring surrounds opening to nostril. No scales on head.

Teeth. Conical, an external row in upper jaw the largest; smaller, but conical ones in lower jaw.

Fins. Origin of ventral in front of pectoral, of first dorsal over its first third; one-tenth of an inch between first and second dorsal. Spines weak. Caudal wedge-shaped. Ventrals united.

Scales nearly quadrangular, elevated along their centre.

Colours. Of a general light brown, with some irregularly disposed dusky bands on the sides and back; a dark brown bar descends directly downwards from the eye; several irregular brown marks about operculum and head. The first dorsal has a deep black crescentic mark, commencing between second and third spines, and continued to the last; above this a white curved band, bordered above with black. Second dorsal, anal, and caudal brownish, barred with several series of rows of a darker colour.

This fish appears in large quantities in the Kurriavanoor River, north of the town of Cochin, when the bar is broken down, and the freshes from the Ghauts reach the sea. It is not captured there more than 2 or 3 inches in length; but perhaps they may be the young of a larger species.

ELEOTRIS BUTIS, Buch. Ham.

Kullahray (Mal.).

B. vi. D. 6 $\frac{1}{8}$. P. 17. V. $\frac{1}{5}$. A. $\frac{1}{8}$. C. 15. L. l. 28.
L. tr. 12.

Length of specimens from 4 to $5\frac{2}{10}$ inches.

Very common in the backwater, where they are most numerous at the commencement of the year. They are eaten by the natives.

ELEOTRIS FUSCA, Bloch, Schn.

Poollan (Mal.).

B. vi. D. 6 $\frac{1}{8}$. P. 17. V. $\frac{1}{5}$. A. $\frac{1}{8}$. C. 15. L. l. 64.
L. tr. 21.

Length of specimens from 2 to $2\frac{5}{10}$ inches.

Inhabits most of the muddy ditches and tanks; are often found in the paddy-fields, and sometimes in the backwater.

AMBLYOPUS HERMANNIANUS, Lacép.

B. v. D. $\frac{6}{40}$. P. 15. V. $\frac{1}{5}$. A. $\frac{1}{37}$. C. 13.

Length of specimen from 5 to $5\frac{7}{10}$ inches.

AMBLYOPUS CÆCULUS, Bloch, Schn.

B. v. D. 6/46. P. 15. V. 1/5. A. 1/43. C. 13.

Length of specimen $7\frac{4}{10}$ inches.*BATRACHUS GRUNNIENS*, Bloch.

B. vi. D. 3/20. P. 25. V. 1/5. A. 14. C. 12. Opercular spines iv.

Length of specimen 8 inches.

BATRACHUS TRISPINOSUS, Günther.

B. vi. D. 3/20. P. 25. V. 1/5. A. 14. C. 12. Opercular spines iii.

Length of specimen $5\frac{6}{10}$ inches.

Caught with the last.

SALARIAS FASCIATUS, Bloch.

B. vi. D. 12/20. P. 15. V. 1/5. A. 24. C. 11.

Length of specimen $2\frac{4}{10}$ inches.*TEUTHIS JAVA*, Linn.

B. v. D. 13/10. P. 15. V. 2/3. A. 7/9. C. 17.

Length of specimens from 4 to $4\frac{5}{10}$ inches.

Small specimens common; they are eaten by the lower class of natives.

TEUTHIS VERMICULATA, Kuhl & V. Hass.B. v. D. $\frac{13}{9-10}$. P. 16. V. 2/4. A. $\frac{7}{8-9}$. C. 17.Length of specimens from 4 to $11\frac{2}{10}$ inches.

Four specimens were captured in June 1863; two upwards of 11 inches, the other two upwards of 4 inches. The natives asserted the fish to be good eating.

TEUTHIS MARMORATA, Quoy & Gaim.

B. v. D. 13/10. P. 17. V. 2/3. A. 7/9. C. 19.

Length of specimen 9 inches.

ACANTHURUS MATOIDES, Cuv. & Val.

B. v. D. 9/25. P. 17. V. 1/5. A. 3/25. C. 16.

Length of specimens from 4 to 6 inches.

Very common; they do not appear to grow to any very large size there, although the natives assert the contrary. They are eaten by the lower classes.

ACRONURUS MELANURUS, Cuv. & Val.

B. v. D. 10/24. P. 15. A. 3/24. C. 17.

Length of specimen $1\frac{5}{10}$ inches.

Second dorsal spine serrated on its anterior margin.

NANDUS MARMORATUS, Buch. Ham.

Mootahree (Mal.).

B. vi. D. 13/12. P. 16. V. 1/5. A. 3/7. C. 15. L. 1. 46.
L. tr. 7/13.

Length of specimens from 3 to $5\frac{5}{10}$ inches.

Common in the rivers and paddy-fields.

CATOPRA MALABARICA, Günther*.

B. vi. D. 14/12. P. 15. V. 1/5. A. 3/8. C. 16. L. 1. 25.
L. tr. 4/8.

	inches.	
Length of specimen	$3\frac{3}{10}$.	
— of head	$\frac{9}{10}$,	or about one-fourth of total length.
— of pectoral	$\frac{7}{10}$,	or about one-fifth of total length.
— of caudal	$\frac{7}{10}$,	or about one-fifth of total length.
— of base of dorsal	$1\frac{5}{10}$,	or about one-half of total length.
— of base of anal	$\frac{5}{10}$,	or about one-seventh of total length.
Height of head	$\frac{8}{10}$,	or about one-fourth of total length.
— of body	$1\frac{2}{10}$,	or about one-third of total length.
— of hard dorsal	$\frac{7}{20}$,	or about one-ninth of total length.
— of soft dorsal	$\frac{5}{10}$,	or about one-seventh of total length.
— of base of caudal	$\frac{1}{10}$,	or about one-eighth of total length.
— of ventral	$\frac{5}{10}$,	or about one-seventh of total length.
— of anal	$\frac{5}{10}$,	or about one-seventh of total length.

Diameter of eye $\frac{5}{20}$ inch, or $\frac{2}{7}$ of the length of head; $\frac{5}{20}$ inch from end of snout, $\frac{2}{10}$ apart.

Body compressed. The mouth being situated below the median line of the body, there is a considerable rise to the dorsal. Jaw equal; intermaxillaries protractile; upper lip rather fleshy; the superior maxillary extends to slightly behind the anterior margin of the orbit. Upper surface of eye nearly close to profile. Præoperculum, posterior limb nearly vertical, entire; angle rounded; inferior limb horizontal, and little more than half the length of the posterior limb. Sub- and inter-opercula with a few very fine serrations at their approximating extremities. Operculum with two rather strong flat spines, and ending in a membranous point. Præorbital entire. Nostrils rather wide apart, posterior the largest. Pseudobranchiæ present. Branchiostegous rays hidden. Gills $3\frac{1}{2}$. Opercula and head scaled; but no scales between or before the eyes, nor on the præorbital.

Teeth. Several rows of small teeth in the jaws, with an external larger band. Numerous villiform teeth on vomer and palate.

Fins. Origin of pectoral and dorsal in a line. Ventral slightly behind. Anal arises opposite commencement of soft dorsal. Dorsal,

* Dr. Günther has described this species from one of the two specimens out of my collection which I had placed in the British Museum. Having a smooth præorbital, and no serrations at the præoperculum, smooth tongue, &c., I should have placed it in the genus *Badis*, as defined in his 'Catalogue of the Acanthopterygian Fishes.'

spinous portion can be laid flat on the back, where it is received into a depression; it is $1\frac{2}{10}$ inch in extent, and much lower than the soft portion, which is $\frac{9}{20}$ inch and pointed. Caudal wedge-shaped. Pectoral rounded. Ventral pointed. Soft portion of anal pointed. Dorsal spines rather strong; interspinous membrane deeply notched, and extending a little beyond the points of the spines; first $\frac{1}{10}$; second $\frac{2}{10}$; third $\frac{3}{10}$; thence they continue much the same length; central soft rays the longest. Ventral spine pretty strong. Anal spines strong, and they can be received into a depression the same as the dorsal spines; first $\frac{2}{10}$; second $\frac{3}{10}$, and strongest; third slightly longer; centre soft rays longest, the same of the caudal.

Scales ctenoid, greatest diameter from above downwards; some are continued over the soft portion of the dorsal and anal, and also over the base of caudal.

Lateral line interrupted, at first in upper fourth of body; opposite fourth soft dorsal ray it ceases on twenty-first scale; then from below last portion of soft dorsal it is continued along median line as far as, but not on to, caudal fin.

Colours. Rifle-green, with purplish reflexions, darker on the back than on the abdomen. Fins greenish. Eyes yellowish green.

Two specimens were sent me by the Rev. Henry Baker (junior) from Mundykiem, on the hill-ranges of Travancore, not far from Cochín. It appears to be common there.

ANABAS SCANDENS, Daldorff.

Undee collee (Mal.).

B. vi. D. $\frac{17-18}{8-10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{9-10}{9-11}$. C. 16. L. 1. 27-32.
L. tr. $\frac{5}{9}$.

Length of specimens from 3 to $6\frac{8}{10}$ inches.

The number of scales along the lateral line differs considerably in different specimens, as do also the number of fin-rays, the comparative size and colour of the body, and the valance at the margin of the superbranchial organ.

The climbing-properties attributed to these fish in other parts of India are believed in by the natives of Malabar; but personal observation can neither confirm nor refute this belief.

Having taken some live specimens at Kurriapudnam in the hot weather, and kept them in damp grass, some retained vitality as long as eighteen hours; frequently, when apparently dead, if water were cautiously applied, they recovered.

Climbing Perch are difficult to keep in a vivarium, owing to their constantly jumping out, a foot in height being insufficient for the purpose of retaining them. They are able to progress on the ground in two ways, either by laying on their sides, flapping their tails, and assisting themselves by their pectoral fins, or else by the aid of their pectoral fins, first one being advanced, and then the other.

They can erect their fins, and likewise their scales, at pleasure; and when placed on a flat surface, even when apparently nearly dead,

should their tail be touched, they at once erect their spinous fins and their scales, even as far as those at the base of the caudal. They at the same time erect their gill-covers. This power must of course be of great use in progression, if they employ their gill-covers to assist them in climbing.

They inhabit most pieces of fresh water and paddy-fields, and are deemed good eating by the natives, who, immediately they catch them, kill them by biting their heads. A fatal accident occurred a few years since near Cochin, owing to one of these fish having slipped into the throat of the native who was biting its head. Owing to the erectile nature of its spines and scales, it could not be withdrawn, and the man was suffocated.

POLYACANTHUS CUPANUS, Cuv. & Val.

Caringanah and *Wunnuttee* (Mal.).

B. vi. D. $\frac{14}{6}$. P. 10. V. $\frac{1}{5}$. A. $\frac{18}{11}$. C. 13. L. 1. 30-32.
L. tr. $\frac{4}{7}$.

Length of specimens from $1\frac{5}{10}$ to $2\frac{5}{10}$ inches.

Posterior half of horizontal limb of præoperculum serrated; præ-orbital serrated.

Colours. Of a general rifle-green, with some spots on the fins, and an elongated scarlet ray to the ventral.

In one specimen an inch long, but which appears to be the *P. cupanus*, there was one spine less in the dorsal, and one ray less in the anal. It was of a beautiful rose-colour, rather dark brown along the back and base of anal fin. Two deep-black horizontal lines passed, one from above the orbit direct to the caudal, and a second from the angle of the mouth, through the eye, to the caudal. Head and cheeks spotted. The natives asserted it was the same as the common species; but, out of hundreds subsequently procured, none had the coloration of this one.

ATHERINA FORSKÄLII, Rüpp.

B. vi. D. $5\frac{1}{10}$. P. 17. V. $\frac{1}{5}$. A. $\frac{1}{13}$. C. 15. L. 1. 40.
L. tr. 6.

Length of specimens from 3 to $3\frac{1}{10}$ inches.

Very abundant during the monsoon months, and some are captured at the end of the year. This is one of several families which are known to the Europeans as *Whitebait*, like which they are dressed for the breakfast-table.

MUGIL WAIGIENSIS, Quoy & Gaim.

Freshwater Mullet.

B. vi. D. $4\frac{1}{8}$. P. 17. V. $\frac{1}{5}$. A. $\frac{3}{8}$. C. 15. L. 1. 26.
L. tr. 8.

Length of specimen $11\frac{2}{10}$ inches.

Captured from June, when they ascend high up the rivers, and are considered by the natives as freshwater fish.

MUGIL SUNDANENSIS, Bleeker.

B. v. D. $4 \frac{1}{8}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. L. l. 31. L. tr. 9.
Length of specimen 5 inches.

MUGIL ENGELI, Bleeker.

B. v. D. $4 \frac{1}{8}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 14. L. l. 34.
L. tr. 11.

Length of specimen $7 \frac{2}{10}$ inches.

MUGIL CUNNESIUS, Cuv. & Val.

Mahlah (Mal.).

B. v. D. $4 \frac{1}{8}$. P. 17. V. $\frac{1}{5}$. A. $\frac{3}{9}$. L. l. 41. L. tr. 13.

Length of specimen $15 \frac{6}{10}$ inches.

It is from this species the fine fish-roses are obtained for which Cochin is so celebrated. They are removed from the fish immediately on being captured, and then dried in the sun. They commence coming into season about the middle of October or November, when these fish swarm into the river to deposit their spawn. By February all the Mulletts (commonly known as "Cunnumboo," *Mal.*) begin to be scarce, and by April they are almost unprocurable.

MUGIL PARSIA, Buch. Ham.

B. v. D. $4 \frac{1}{7}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 14. L. l. 32.
L. tr. 8.

Length of specimen $9 \frac{1}{10}$ inches.

MUGIL POICILUS, Day, sp. nov.

B. v. D. $4 \frac{1}{8}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{9}$. C. 14. L. l. 32.
L. tr. 10.

Length of specimens from $3 \frac{4}{10}$ inches to 7 inches.

— of head	$1 \frac{4}{10}$,	or about one-fifth of total length.
— of pectoral	1,	or about one-seventh of total length.
— of caudal	$1 \frac{3}{10}$,	or about one-fifth of total length.
— of base of 2nd dorsal	$\frac{2}{10}$,	or about one-fourteenth of total length.
— of base of anal	$\frac{5}{10}$,	or about one-fourteenth of total length.
Height of head	$\frac{9}{10}$,	or about one-eighth of total length.
— of body	$1 \frac{4}{10}$,	or about one-fifth of total length.
— of hard dorsal	$\frac{8}{10}$,	or about one-ninth of total length.
— of soft dorsal	$\frac{7}{10}$,	or about one-tenth of total length.
— of base of caudal	$\frac{7}{10}$,	or about one-tenth of total length.
— of ventral	1,	or about one-seventh of total length.
— of anal	$\frac{7}{10}$,	or about one-tenth of total length.

Diameter of eye $\frac{4}{10}$ inch, or $\frac{2}{7}$ length of head; $\frac{3}{10}$ inch from end of snout, $\frac{6}{10}$ apart. An adipose eyelid covers a little more than one-third of the eye on either side in the adult fish. In the young the anterior curtain is much broader than the posterior one.

There is not much rise from the snout to the first dorsal. Lower
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jaw slightly the shortest, with a notch in its centre, which is curved upwards. Upper lip broad, superior maxillary considerably protrusible; it is bent downwards below and behind the angle of the mouth, where its extremity is visible. Præorbital angularly bent, with a rounded, finely serrated margin. Nostrils rather wide apart; the posterior largest, and nearer the orbit than it is to the anterior one. Interorbital space nearly flat. Snout broad, somewhat pointed in the centre. The cleft of the mouth is rather more than twice as broad as deep. The free space on the chin is moderately long, tongue-shaped.

Pectoral fin situated a little above the central line of the body, and extending to the eighth scale; no elongated pointed scale at the axil. Twenty scales from the snout to the origin of the first dorsal, which commences nearer the snout than to the caudal fin, and above the eighth scale of the lateral line. Eight rows of scales between the two dorsal fins.

First dorsal spines strong: first $\frac{8}{10}$, the strongest; second $\frac{8}{10}$; third $\frac{7}{10}$; fourth $\frac{3}{10}$. The spines, laid flat on the back, reach a little more than halfway from their origin to the base of the second dorsal. Second dorsal, caudal, anal, and pectoral have some fine scales at their base. Caudal deeply emarginate. Pectoral rounded. Ventral with a pointed scale at its origin.

Teeth. A fine row of teeth in the upper jaw, more apparent in the young fish than in the older specimens.

Scales. Rather irregular in size, highest from above downwards. Each scale on the body and base of the fins in the adult fish with a gland in its centre of a deep black colour. In the young fish these glands are not so apparent; and until they reach about 3 inches the black central spots on the scales do not commence to show themselves; but still each scale is marked by a central cavity of a rounded shape, but very irregular in size. The scales covering the head vary much in shape, the posterior ones being irregularly quadrilateral, the central one between the orbits nearly round but with deeply emarginated sides, two oval ones in front, which partially cover it.

Colours. Greyish, shot with silver, lightest on the sides and abdomen: each scale with a deep black central spot. Shot with pink and golden about the cheeks. Fins stained with grey.

By no means rare at times; but in some years they seem to almost absent themselves. They are rarely seen above 8 inches. Are good eating.

OPHIOCEPHALUS STRIATUS, Bloch.

Verarl or Wrahl (Mal.).

B. v. D. 37-40. P. 17. V. 6. A. 23-26. C. 13. L. 1. 51.
L. tr. $\frac{5-7}{9-7}$.

Length of specimens from $5\frac{5}{10}$ to $15\frac{1}{10}$ inches.

These fish, known over most of India as the Morrul (Hind.), are said to attain to the length of 3 feet; they inhabit all stagnant pools of water and rivers, whilst the young may be found in every paddy-

field. It is extraordinary in what small pieces of water they will live and thrive, owing to the immensity of animal life in the fresh waters of Malabar.

They have obtained their common appellation of "Walking-fish" from being able to progress some distance over moist places, and thus change their localities, which they do either when the pond in which they live is becoming dried up, or when the monsoon fills every place with water. Possessing a cavity (like the rest of the genus) above the gills which enables them to carry water, they are capable of keeping their respiratory organs moist so long as the fluid lasts, and can consequently breathe for some time after leaving their native element. They are not able to erect their fins, gill-covers, and scales like the *Anabas scandens*, but otherwise progress in the same manner. It is often asserted that these fish can exist in the dried mud of tanks; but though frequently promised by natives that they would discover them in such places, they invariably failed. Perhaps this idea may have originated because it is at the commencement of the monsoon, when the rains begin to render all the previously dried-up tanks first mud and then water, these fish may be seen migrating. It may be that as they were known to exist there at a prior time when there was water, were not apparent when the tank was dry, but were again seen as the exsiccated mud became moist*, the natives believe they have arrived out of it. It can scarcely be supposed these fish could retain vitality in dried mud, where they would be unable to breathe, to move, or to feed. Europeans have frequently seen them migrating; and that they are capable of walking, personal observation can attest.

OPHIOCEPHALUS GACHUA, Buch. Ham.

Kuravu (Mal.).

B. v. D. 32-33. P. 13. V. 6. A. 21. C. 11. L. l. 40.
L. tr. $\frac{4}{7}$.

Length of specimens from 5 to $5\frac{3}{10}$ inches.

Said not to grow upwards of 8 inches in length. Very common, and found in almost every piece of fresh water, even in many wells. Eaten by the natives. Takes a bait freely.

OPHIOCEPHALUS MARULIUS, Buch. Ham.

Chaaree verarl (Mal.).

B. v. D. 50. P. 18. V. 6. A. 32. C. 14. L. l. 59. L. tr. $\frac{6-9}{9-6}$.

* In one south-west monsoon, the grassland in front of the house I lived in, and formerly part of the esplanade, became one day a sheet of water. As that evaporated and soaked into the earth I could perceive fish swimming about. Having sent out persons to capture them, several species were brought me, viz. a *Saccobranchus singio*, an *Ambassis*, and some Barbels or *Systomi*. I could never account for how they arrived; for the remnants of the ramparts precluded their entrance except by the drains, but the only one which opened there took a circuitous route to the sea-face of the river, whilst all captured were freshwater species.

Length of specimen $20\frac{4}{10}$ inches.

Its coloration varies considerably: in the specimen in my collection the back was dark grey, which colour passed downwards in five or six digitations to below the lateral line. Abdomen bright orange, with a few dusky markings at the base of the scales. Dorsal, caudal, pectoral, and anal grey; ventrals orange. On the posterior third of the body, of the dorsal and anal fins, and over the whole of the caudal were round pearl-like spots.

These are considered the best of the genus for the table; they do not appear to frequent stagnant waters or pools.

The *O. grandinosus*, C. & V., appears to be this species. The colours of many Indian specimens are nearly as vivid as represented by the Chinese painter. Likewise *O. leucopunctatus*, Sykes, seems to be merely the *O. marulius*.

OPHIOCEPHALUS DIPLOGRAMMA, Day, sp. nov.

B. v. D. 43. P. 15. V. 6. A. 27. C. 15. L. 1. 84. L. tr. $\frac{7-8}{13-12}$.

inches.

Length of specimen from $3\frac{9}{10}$.

———— of head $1\frac{1}{10}$, or about two-sevenths of total length.

———— of pectoral $\frac{4}{10}$, or about one-tenth of total length.

———— of base of dorsal $1\frac{8}{10}$, or about one-half of total length.

———— of base of anal . $1\frac{1}{10}$, or about two-sevenths of total length.

———— of caudal $\frac{6}{10}$, or about one-seventh of total length.

Diameter of eye $\frac{2}{10}$ inch, or $\frac{2}{11}$ of length of head; $\frac{2}{10}$ inch from end of snout, nearly $\frac{3}{10}$ apart.

Body subcylindrical in front; head depressed and flat superiorly, rather compressed laterally. Orbit oval and close to profile.

Cleft of mouth lateral, wide; lower jaw the longest; superior maxillary extends behind to below posterior third of orbit. Thirteen rows of scales between orbit and angle of præoperculum. Inter-orbital space flat, slightly wider than the length of the snout; plates irregularly round, with raised margins, and smaller than those on the back of the head. About six series of scales between the orbits, the centre ones of which are the largest. Nostrils rather wide apart, the anterior of which is superior and the largest. A sharp spinous process exists on either side of the back of the head, above the operculum.

Teeth. Several rows of sharp teeth in the lower jaw, with an irregular internal row of larger ones. Several bands of sharp teeth in the upper jaw, vomer, and palate, in these two last places interspersed with larger ones.

Fins. Ventral reaches nearly as far as the commencement of anal. Fin-rays all weak. Pectoral rounded. Caudal slightly rounded.

Scales comparatively small, lineated, and raised at their margins. Lateral line makes a curve from the seventh to the eighth row of scales.

Colours. Back greyish; sides scarlet; abdomen white. A broad black band passes through the eye direct to the upper half of caudal

fin; a second commences at the angle of the mouth, and proceeds to lower half of caudal. Dorsal fin grey; caudal scarlet, with two black longitudinal lines; pectoral, ventral, and anal yellowish, with a dark grey base.

Rare; only one specimen obtained, in October 1863.

FISTULARIA SERRATA, Cuv.

B. vii. D. 15. P. 15. V. 6. A. 14. C. 2+6 | 2 | 6+2.

Length of specimens from $18\frac{4}{10}$ to $23\frac{7}{10}$ inches.

Not rare.

MASTACEMBALUS ARMATUS, Lacép.

Ahlee (Mal.).

B. vi. D. 37 | 74. P. 23. A. 3 | 79. C. 15.

Length of specimens from $9\frac{6}{10}$ to $18\frac{4}{10}$ inches.

Common in the rivers. They are dangerous to handle, on account of their dorsal and anal spines, as well as those on the præoperculum and in front and below the orbit.

Fair eating; but best in a dry curry. They salt well.

MASTACEMBALUS GUENTHERI, Day, sp. nov.

B. vi. D. 27-28 60-64. P. 15. A. 3 62-64. C. 9.

inches.

Length of specimens from .. $4\frac{8}{10}$ to 7 inches.

———— of head	1,	or about 1-7th of total length.
———— of pectoral	$\frac{3}{10}$,	or about 1-23rd of total length.
———— of caudal	$\frac{4}{10}$,	or about 1-17th of total length.
———— of base of hard dorsal	$2\frac{8}{10}$,	or about 2-5ths of total length.
———— of base of soft dorsal	$2\frac{4}{10}$,	or about 1-3rd of total length.
———— of anal	$2\frac{6}{10}$,	or about 2-5ths of total length.
Height of head	$\frac{3}{10}$,	or about 1-23rd of total length.
———— of body	$\frac{8}{10}$,	or about 1-9th of total length.
———— of soft dorsal	$\frac{8}{10}$,	or about 1-23rd of total length.
———— of anal	$\frac{3}{20}$,	or about 1-12th of total length.

Diameter of eye $\frac{1}{10}$ length of head; eyes slightly wider apart, $\frac{4}{10}$ from end of snout.

Superior maxillary longer than the inferior; and soft snout extends $\frac{1}{8}$ th of an inch beyond the end of the jaw. Cleft of mouth small, and extending about halfway to the orbit. Præoperculum with two spines at its angle, directed backwards and downwards, and some fine ones along its lower limb. A rather long and strong, sharp, erectile præorbital spine. Thirteen rows of scales between orbit and angle of the præoperculum. The whole of the head and between the orbits scaled.

Teeth. Several rows of sharp-pointed teeth, directed backwards, in both upper and lower jaws.

Fins. Dorsal spines strong, short, and sharp, commencing at about the termination of the first fifth of the body. Soft dorsal, caudal, and anal united. Anal spines strong, the centre one the longest and

strongest, the third being nearly hidden; they all can be laid flat in a kind of sheath, as can also those of the dorsal.

Colours. General colour greenish brown; a yellowish-white streak passes from just above the eye, along the lateral line, to the centre of the caudal. Soft portion of dorsal dotted with brown, and having fourteen irregular blotches along its base, extending to the back of the fish. Caudal with a black bar at its base, and four or five lighter ones between that and its extremity; anal irregularly spotted. Abdomen, from vent to head, of a dirty yellowish white, with a number of blotchy markings extending on to it from the side. Operculum greyish brown, the same colour being also found on the throat. Præoperculum of a lighter colour; lower jaw dirty white.

Very common in paddy-fields and the Trichoor backwater; said never to grow to a large size; is considered good eating.

GLYPHIDODON COCHINENSIS, Day, sp. nov.

B. vi. D. $\frac{13}{11}$. P. 15. V. $\frac{1}{5}$. A. $\frac{2}{10}$. L. 1. 28. L. tr. $\frac{3}{8}$.

	inches.	
Length of specimens from	$3\frac{3}{10}$ to $3\frac{8}{10}$	inches.
— of head	$\frac{7}{10}$,	or about 2-11ths of total length.
— of pectoral	$\frac{1}{10}$,	or about 1-6th of total length.
— of caudal	$1\frac{3}{10}$,	or about 1-3rd of total length.
— of base of dorsal	$1\frac{6}{10}$,	or about 2-5ths of total length.
— of base of anal	$\frac{7}{10}$,	or about 2-11ths of total length.
Height of head	$\frac{7}{10}$,	or about 2-11ths of total length.
— of body	$1\frac{1}{10}$,	or about 2-6ths of total length.
— of hard dorsal	$\frac{5}{10}$,	or about 2-15ths of total length.
— of soft dorsal	$1\frac{1}{10}$,	or about 2-6ths of total length.
— of base of caudal	$\frac{4}{10}$,	or about 1-9th of total length.
— of ventral	$\frac{6}{10}$,	or about 1-6th of total length.
— of anal	$\frac{9}{20}$,	or about 1-8th of total length.

Diameter of eye $\frac{2}{10}$ inch, or $\frac{2}{7}$ length of head; $\frac{3}{20}$ inch from end of snout, $\frac{2}{10}$ apart.

Body ovoid, compressed, width at shoulder being scarcely equal to half its height; profile from snout to dorsal fin convex. Soft portions of dorsal, anal, and caudal fins much elongated.

Jaws of equal length; superior maxillary extends as far backwards as opposite the anterior margin of the orbit. Præoperculum entire; posterior limb slightly oblique, and half as long again as the inferior limb, which is horizontal, the angle being rounded. Sub- and interopercula entire. Operculum ending in a flat rather strong spine at its centre, a little below the level of the lower margin of the orbit; a second a short distance above, and in one specimen a third about an equal distance below the central one. The posterior nostril rounder than the anterior, which is transversely oval; they are a short distance apart, and near anterior surface of the orbit, slightly above its median line. All the opercula and interorbital space scaled. Suprascapular, scapular, and humeral bones entire.

Teeth flattened and compressed into a single row, decreasing in size from the centre of the jaws to their circumference.

Fins. Dorsal commences opposite end of operculum. Pectoral slightly behind, and ventral a little more posterior. Anal commences opposite about the tenth dorsal spine. Spinous portion of dorsal $1\frac{2}{10}$ inch in extent; spines moderately strong; interspinous membrane slightly longer than the spines, and deeply notched; soft portion elongated; first spine $\frac{2}{10}$, second nearly $\frac{3}{10}$ inch; and they gradually increase to the last, which is $\frac{5}{10}$. Pectoral rounded. Ventral spine $\frac{4}{10}$ inch, moderately strong; first soft ray prolonged. Anal, first spine $\frac{5}{20}$, second $\frac{5}{10}$, and the strongest; soft rays prolonged. Caudal deeply lunated; outer rays much prolonged.

Scales. Greatest diameter from above downwards; some are continued over the soft portion of the dorsal and anal and commencement of caudal.

Lateral line at first on third scale, and is thus continued for about eighteen scales, when it apparently ceases; but it may be found continued on the sixth row in the form of round glandular cavities in the centre of each scale.

Colours. Of a deep purplish black; the margins of some scales of a lighter shade, lightest on the abdomen. Pectoral fins not so deeply stained as the others. Eyes dark hazel.

Only three specimens were observed at Cochin, and they were all captured in one net.

PLATYGLOSSUS DUSSUMIERI, Cuv. & Val.

B. vi. D. $\frac{9}{12}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{12}$. C. 15. L. l. 29. L. tr. $\frac{3}{10}$.

Length of specimens from $3\frac{6}{10}$ to $4\frac{4}{10}$ inches.

GERRES PUNCTATUS, Cuv. & Val.

B. vi. D. $\frac{9}{10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{7}$. C. 17. L. l. 42. L. tr. $\frac{5}{8}$.

Length of specimens from $4\frac{1}{10}$ to $7\frac{7}{10}$ inches.

Arrives in Cochin in large numbers in the month of October; is eaten by the natives.

GERRES FILAMENTOSUS, Cuv. & Val.

B. vi. D. $\frac{9}{10}$. P. 15. V. $\frac{1}{5}$. A. $\frac{3}{7}$. C. 17. L. l. 42. L. tr. $\frac{5}{9}$.

Length of specimen $5\frac{9}{10}$ inches.

ETROPLUS SURATENSIS, Bloch.

Kurree meen (Mal.).

B. vi. D. $\frac{18-19}{14}$. P. 17. V. $\frac{1}{5}$. A. $\frac{13}{11}$. C. 16. L. l. 45. L. tr. 21.

Length of specimens from $1\frac{4}{10}$ to $10\frac{2}{10}$ inches.

During the monsoon time the colours of these fish are most beautiful; the eight vertical bands are more distinctly marked, the abdomen becomes nearly white, the back dark green, whilst a round white pearly spot exists on nearly every scale. Very young fish

have a large black ocellus, surrounded by a white margin, and extending from the fourth to the tenth soft ray of the dorsal. When these fish frequent brackish water, they generally become of a deep purple colour.

Very common in all pieces of fresh water, and excellent eating when of a large size. They take a bait freely, but are not so easily captured by a net, as they appear to dive down into the mud.

ETROPLUS MACULATUS, Bloch.

Pulluttay meen (Mal.).

B. vi. D. $\frac{18}{10}$. P. 14. V. $\frac{1}{5}$. A. $\frac{13}{9}$. C. 16. L. l. 35. L. tr. 21.

Length of specimens from $1\frac{5}{10}$ to $3\frac{1}{10}$ inches.

Having captured about fifty specimens, on July 15th, 1863, from the fort ditch, for the purpose of minutely examining their colours, no two could be said to be exactly similar. The seventeen or eighteen rows of golden spots were more or less apparent in all: but in some the three blotches on the side were black, in others of emerald-green, whilst all intermediate shades were perceptible; some were glossed over with purple, which was absent in others.

Common in every paddy-field, tank, or piece of fresh water; and even occasionally in the backwater within the influence of the tides.

Eaten by the natives, but, as they rarely exceed 3 inches in length, are not esteemed by the Europeans.

2. NOTICE OF A NEW WHALEBONE WHALE FROM THE COAST OF DEVONSHIRE, PROPOSED TO BE CALLED *ESCHRICHTIUS ROBUSTUS*. BY DR. J. E. GRAY, F.R.S., ETC.

A better proof could not be required of the little attention that has hitherto been paid to the study of the Whales of the seas surrounding the British islands than the fact that, almost immediately after the appearance of my paper on British Whales, in which I had doubled the number of species that had before been recorded as found on our coast, a bone has been discovered showing most distinctly that a species of Whalebone Whale which had only been described from an imperfect skeleton buried in the sand on the coast of Sweden is also an inhabitant of our seas.

Mr. Pengelly has kindly brought to me one of the middle cervical vertebræ of a Finner Whale, which was washed ashore at Babbacombe Bay, in Torbay, on the coast of Devonshire, on the 24th of November 1861. It is so different in its form and proportions from the cervical vertebræ of any of the species of British Whales which I described in my paper on those animals (printed in the 'Proceedings' of the Society for 1864), that I lose no time in bringing a description of it before the Society; for, as I have already observed, I consider that we must treat remains of Whales as we do fossil animals—describe them from a single bone, if no more can be procured, if, after careful study and comparison, we are satisfied that the bone in